UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1201 ELM STREET, SUITE 500
DALLAS, TEXAS 75270

April 1, 2020

Scott A. Thompson
Executive Director
Oklahoma Department of Environmental Quality
P.O. Box 1677
Oklahoma City, OK 73101-1677

Dear Mr. Thompson:

This letter transmits EPA's end of-year (EOY) evaluation of the Oklahoma Department of Environmental Quality's Underground Injection Control (UIC) program for Fiscal Year 2019 (FY 2019). The EOY includes both UIC oversight and related Performance Partnership Grant (PPG) topics. Region 6 UIC oversight staff provided the draft FY 2019 program review to Ms. Hillary Young of your staff on January 3, 2020. Ms. Young commented on EPA's draft EOY evaluation on January 23, 2020, and appropriate changes are included.

Oversight of State UIC programs remains a priority for Region 6. I commend the staff of ODEQ's Land Protection Division in effectively meeting or exceeding FY 2019 UIC grant work plan program targets. In particular, I would like to commend ODEQ in their efforts towards implementing an Aquifer Storage and Recovery (ASR) program, as well as their willingness and diligence to seek support from EPA in confronting difficult issues. In FY 2019, ODEQ continued to initiate program, regulatory, and legislative updates, and support pilot projects, to ensure a successful ASR program.

If you wish to discuss any aspect of this EOY evaluation, call me at (214) 665-8138, or your staff may call Mr. Philip Dellinger at (214) 665-8324. If your staff has specific questions about UIC grant performance, please contact Mr. Michael Vaughan at (214) 665-7313; or questions about EPA's program oversight, please contact Ms. Lauren Ray at (214) 665-2756.

Sincerely,

Charles Maguire

Charles W. Maguire
Director
Water Division

Enclosure

cc (w/encl.): Ms. Kelly Dixon, Director, Land Protection Division
Dr. Saba Tahmassebi, P.E., Engineering Manager, Office of Executive Director
Ms. Hillary Young, P.E., Engineering Manager, Land Protection Division

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EPA REGION 6 END-OF-YEAR EVALUATION OF THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY UNDERGROUND INJECTION CONTROL PROGRAM
Federal Fiscal Year 2019
July 1, 2018-September 30, 2019*

EXECUTIVE SUMMARY

This End-of-Year (EOY) report details the significant accomplishments of the Oklahoma Department of Environmental Quality (ODEQ), Underground Injection Control (UIC) Program, in meeting their Fiscal Year (FY) 2019 UIC grant work plan commitments. The State met or exceeded all UIC-related reporting and field activity goals in their FY 2019 Land Protection Division Focus Document (work plan).

INTRODUCTION

To increase ground water protection, a Federal UIC program was established under the provisions of the Safe Drinking Water Act of 1974. Delegation of the Federal program to the State of Oklahoma is found in 40 CFR 147, Subpart LL; the effective date that the program was delegated to the State was July 24, 1982. ODEQ has jurisdiction over Class I, Class III, Class IV and Class V wells, excluding those wells under the jurisdiction of the Oklahoma Corporation Commission (OCC). OCC has jurisdiction over all Class II wells; Class V wells that are utilized in the remediation of ground water associated with underground or above ground storage tanks regulated by OCC; and those wells used for the recovery, injection or disposal of mineral brines as defined in the Oklahoma Brine Development Act.

This report covers a 15-month period, from July 1, 2018 through September 30, 2019. This includes the Federal FY 2019, which was October 1, 2018 to September 30, 2019. On June 5, 2019, EPA approved ODEQ's request to change their fiscal year for PPG award purposes to match the Federal fiscal year, October 1 to September 30. EPA solicited comments on a draft of this FY 2019 EOY report through an e-mail transmittal to Ms. Hillary Young, ODEQ Chief Engineer, Land Protection Division, and her comments have been considered in finalizing this report.

ODEQ Office Visit: On October 30, 2018, EPA representatives Ms. Lauren Ray and Mr. Philip Dellinger of the EPA Region 6 Groundwater/UIC Section visited ODEQ's office, and discussed current UIC program implementation issues with Dr. Saba Tahmassebi, Ms. Hillary Young, Mr. David Cates, and Mr. Stephen Baldridge. The meeting focused on the State's permitted Class I injection wells; injection well Classes IV and V inventory updates; Class V well inventory changes; status of permit applications; the State's ASR initiative; rulemaking activities during FY 2018; and Focus Document highlights.

*On June 5, 2019, EPA approved ODEQ's request to extend their FY 2019 to September 30, 2019, and beginning in FY 2020, adapt the same FY start and end dates as EPA, October 1 to September 30.

ODEQ UIC WELL INVENTORY

At the end of FY 2019, ODEQ's UIC inventory consisted of five facilities operating six Class I nonhazardous wells; no Class III solution mineral mining injection wells; two facilities with 20 inactive Class IV wells (10 dormant remediation wells at each site), associated with RCRA remediation projects; and 2,813 individual Class V wells (Table 1), which include remediation wells at Altus, Vance, and Tinker Air Force Bases.

Table 1. ODEQ UIC Well Inventory

Class I Wells		Class III Wells	Class IV Wells	Class V Wells
Hazardous	Nonhazardous			
0	6	0	20*	2,813

***** All Class IV wells are inactive and are associated with RCRA remediation projects.

AQUIFER STORAGE AND RECOVERY (ASR)

Oklahoma has implemented an ASR program, necessary for the State to supply a continuous, reliable source of drinking water during drought conditions. To pave the way for the ASR program, Senate Bill 1219 (signed by the Governor on April 21, 2016), defines subsurface injection for ASR as a beneficial water use, and allows the Oklahoma Water Resources Board (OWRB) to assign water rights for ASR. In 2016, the new law was codified in the Oklahoma Statutes as Title 82, Section 1020.2A. ODEQ is part of a multi-stakeholder workgroup, including ODEQ, OWRB, OCC, DOA, GWPC, USGS, OGS, a State Representative, and two consulting firms, to study and resolve issues related to successful implementation of an ASR program.

Subsequent amendments became effective to the Oklahoma Statutes and Oklahoma Administrative Code (OAC) during Fiscal Years 2017 through 2019 (as discussed below, *Program, Regulatory and Legislative Update*). These amendments added and updated definitions, authorized ODEQ to Issue permits for pilot projects, established permit-related and operating fees, and required specific testing for aquifer protection related to ASR.

A pilot project is currently taking place in the City of Ada, OK, to investigate limited-scale ASR in the Arbuckle-Simpson Aquifer. A project team, including the City of Ada, U.S. EPA, the Chickasaw Nation, Oklahoma State University, and the Oka' Institute at East Central University, in Ada, OK are working with ODEQ and OWRB. The EPA Ground Water and Ecosystems Restoration Division (GWERD) in Ada, OK assisted the City of Ada with design and installation of a monitoring well network, to determine the amount and impact of recharged water on ground water quality. The result of the impact study was a recharge rate of 1,400 gallons per minute; and the impact was greater than 8 million gallons of water added to the aquifer.

PROGRAM, REGULATORY, AND LEGISLATIVE UPDATE

During FY 2019, amendments to OAC Chapter 653, Aquifer Storage and Recovery (ASR), became effective. The amendments updated the definitions of "Aquifer Storage and Recovery" and "Area of Hydrologic Effect" for consistency with the Oklahoma Water Resources Board; provided permit application fees and annual operating fees for ASR; provided notification requirements for ASR facilities; and included specific language requiring bench-scale and field-scale pilot testing for evaluating the compatibility of delivered water with the receiving aquifer for the purpose of ASR. These amendments were initially proposed during FY 2018. The proposed rule changes went before the Water Quality Management Advisory Council and the Environmental Quality Board. The amendments became effective on September 15, 2019. During FY 2018, OAC Chapter 653, Aquifer Storage and Recovery, became effective. The rules allow for a regulatory structure for an ASR program, and enables ODEQ to issue permits for ASR projects. The rules establish a multi-phase permitting process, requirements for the construction and operation of an ASR project, and appropriate testing and modeling to ensure a project is feasible and that the aquifer is not harmed. The proposed rules went before the Water Quality Management Advisory Council and the Environmental Quality Board. The rules became effective on September 15, 2018.

During FY 2017, Oklahoma House Bill (HB)1485 passed in the 2017 legislative session and is now law. HB1485 amended 27A O.S. Section 2-6-101, which added the following definition, "Aquifer storage and recovery (ASR) means delivery of water into an aquifer for later recovery and use." HB1485 also added a law, codified in the Oklahoma Statutes as Section 2-6-110 of Title 27A, which authorizes ODEQ to issue permits for limited-scale pilot projects for ASR. These permit applications will be Tier Il applications under the Oklahoma Uniform Environmental Permitting Act. ODEQ shall determine pilot project criteria and establish a process for the consideration of applications. ODEQ will also require permit conditions deemed necessary or appropriate for protection of the aquifer quality.

Beginning in FY 2015, ODEQ, in conjunction with OCC, implemented a process of dual permitting of Class II disposal wells as Class V injection wells. This process allows existing commercial Class II disposal wells, which are permitted by OCC, to be additionally permitted as Class V injection wells, through ODEQ, for the purpose of disposing of residual wastewaters from drinking water treatment operations. Dual permitting will facilitate the use of previously untapped sources of brackish ground water to be developed for domestic use as a drinking water resource, and provide relief to municipalities that have difficulty disposing of drinking water treatment residuals (DWTRs). Applications for dual permits are submitted to ODEQ for approval, for a term of up to 10 years. The application process for dual permitting was codified during the 2015 legislative session, and became effective on September 15, 2015, during FY 2016.

In November 2014 (FY 2015), ODEQ began the process of amending the OAC, Title 252, Chapter 4, Subchapter 7, Sections 76 through 78. The rulemaking became effective on September 15, 2015 (FY 2016). The rulemaking amended Section 76 UIC Applications-Tier I,

Section 77 UIC Applications-Tier II, and Section 78 UIC Applications-Tier III of Subchapter 7 Water Quality Division Tiers and Time Lines, which describe UIC authorizations requiring Tier I, Tier II and Tier III applications. The rulemaking made it possible to submit a Tier I application and apply for a Class V injection well permit, through ODEQ, for disposal of DWTR into a Class II-D (disposal) well, which is permitted by the OCC. The rulemaking was intended to reduce the burden of DWTR management for communities that are faced with increasing water demands and have difficulties meeting surface water discharge standards for the disposal of the DWTR.

Currently, no applications have been submitted to ODEQ for dual permitted Class II/Class V injection wells. ODEQ is commended for its innovation and leadership in developing this approach, which will provide a valuable tool for Oklahoma in providing safe drinking water to the public.

CHANGE TO FISCAL YEAR BEGINNING AND ENDING DATES

On June 4, 2019, ODEQ requested, by letter to EPA, that their 2019 fiscal year for their PPG award be extended by three months, to end on September 30, 2019, so that beginning in FY 2020, ODEQ's fiscal year will match the Federal fiscal year start and end dates. ODEQ requested this change to better budget, plan and adapt to federal budget allocations; final allocations are typically dispersed in June or July each year. EPA approved the request by email to ODEQ, on June 5, 2019.

To reflect this change, this FY 2019 EOY report covers the 15-month period, July 1, 2018 to September 30, 2019.

FY 2019 PERFORMANCE PARTNERSHIP AGREEMENT (PPA) COMMITMENTS

Deliverables: ODEQ's Quality Assurance Project Plan (QAPP) and Quality Management Plan (QMP) must be updated annually. In FY 2019, both the QAPP and QMP were up to date and approved. ODEQ's most recent UIC QAPP was approved on March 7, 2019, and expires on March 7, 2020. ODEQ's QMP for FY 2018 was approved during FY 2019, on October 9, 2018, and expires during FY 2020, on October 19, 2019. ODEQ's most recent QMP was approved during FY 2020, on October 16, 2019, and expires during FY 2021, on October 16, 2020. ODEQ submitted all quarterly reports (EPA Forms 7520) on time in FY 2019. PPG work plan deliverables for FY 2019 and 2020 are detailed in Table 2.

In FY 2019, EPA changed reporting requirements for EPA Forms 7520; Annual Report Narrative; Program, Regulatory, and Legislative Update; and Well Inventory from paper deliverables to electronic deliverables.

FY 2019 UIC Performance Partnership Grant (PPG) Award: ODEQ was awarded $52,000 in UIC programmatic funds in FY 2019. No UIC Special Project funds were awarded to ODEQ in FY2019.

ODEQ FY 2019 FOCUS Document Commitments: ODEQ's UIC PPG commitments are part of their FOCUS document commitments. The UIC program commitments are detailed in Table 3, along with comments on the State's achievements in meeting these commitments.

ODEQ UIC Program Activity Summary: Table 4 lists ODEQ UIC activities for FY 2019, including semi-annual inspections, Notices of Violation (NOVs) and Notices of Deficiency (NODs) issued, testing, permits, and performance activity measures.

CLASS I INJECTION WELLS

ODEQ continues to maintain a strong field presence regarding Class I wells, as they administer the UIC program in the State. Table 5 details the Class I testing and inspection activities for FY 2019.

Table 2. FY 2019 Grant Work Plan Deliverables

DELIVERABLES	DATE DUE	DATE RECEIVED
FY 2019 UIC Quality Management Plan (QMP)	October 30, 2018	Received: October 9, 2018 Approved: October 19, 2018 Expires: October 19, 2019
FY 2020 UIC Quality Management Plan (QMP)	October 19, 2019	Received: October 3, 2019 Approved: October 16, 2019 Expires: October 16, 2020
FY 2019 UIC Quality Assurance Project Plan (QAPP)	March 7, 2019	Received: February 11, 2019 Approved: March 7, 2019 Expires: March 7, 2020
FY 2019 Quarterly Reports (Form 7520)	April 30, 2019 (1st and 2nd Q)	April 26, 2019
	October 30, 2019 (1st to 4th Q)	October 29, 2019
FY 2019 Annual Report Narrative	October 30, 2019	October 29, 2019
FY 2019 Program, Regulatory, and Legislative Update	October 30, 2019	October 29, 2019
FY 2018 Final Financial Status Report*	December 31, 2018	November 27, 2018
FY 2019 Final Financial Status Report*	December 31, 2019	On time†
FY 2018 Well Inventory*	November 15, 2108	November 15, 2018
FY 2019 Well Inventory*	December 31, 2019	December 26, 2019
FY 2019 Land Protection Division Focus Document/Work Plan with UIC tasks‡	May 1, 2018	Draft received: March 18, 2018 Final received and approved: April 30, 2018
FY 2020 Land Protection Division Focus Document/Work Plan with UIC tasks‡	May 1, 2019	Draft received: March 14, 2019 Final received and approved: May 1, 2019
FY 2019 PPG Application‡ ǁ	May 1, 2018	Received: May 7, 2018§
FY 2020 PPG Application‡ ǁ	May 1, 2019	Received: April 30, 2019

* Due dates for the FY 2018 documents were in FY 2019; due dates for the FY 2019 documents were in FY 2020.

† The status report is marked as received by the Las Vegas Finance Center on January 2, 2020. It appears that this report was submitted on time, and marked as received by EPA after the New Year Day holiday.

‡ Due dates for the FY 2019 documents were in FY 2018; due dates for the FY 2020 documents were in FY 2019.

§ The application was received 6 days late; at the time, ODEQ reported that due to a retirement, new employees had taken over and were learning the program.

ǁ ODEQ's change in PPG fiscal year, from 6/30/2019 to 9/30/2019, is not retroactive, but it does change the budget/project period of the grant to begin 10/01/2018, and end 9/30/2019.

Table 3. ODEQ FY 2019 Land Protection Division FOCUS Document Commitments

ODEQ UIC Program Deliverables per Land Protection FOCUS FY 2019 Document		
Goal and Objective	**Task**	**Comments**
Goal 1, Objective C, Administration	Personnel training, ongoing.	ODEQ UIC maintains its training program to enable staff members to effectively perform their duties. During FY 2019, ODEQ UIC participated in a mechanical integrity workshop and conference sessions of the GWPC annual forum. Staff also attended the GWPC annual UIC conference.
Goal 1, Objective D, Maintain Communication and Working Relationships, UIC	Evaluate tasks and resources to maintain authorization of the Federal UIC program. Update UIC rules as needed and within regulatory timelines.	ODEQ and EPA Region 6 UIC programs continue to maintain open communication and a good working relationship. During FY 2018, ODEQ initiated several program, regulatory, and legislative updates, which were effective in FY 2019, as discussed earlier in this report.
	Submit quarterly reports for the 2nd and 4th quarters, annual program report of UIC activities, and well inventory to EPA.	ODEQ submitted 7520 reports to EPA for the 2nd and 4th quarters; annual program report; and well inventory report for FY 2019; to EPA on schedule. Beginning in FY 2019, these reports are due to EPA electronically rather than paper.
	Continue use of Risk-Based Data Management System (RBDMS) to optimally utilize UIC data. Maintain high accuracy rate. Work toward connectivity with EPA.	The State continues to populate the RBDMS with data from Class I UIC well activities. EPA HQ changed how electronic data reporting is accomplished. Data which were previously pulled directly from RBDMS are now entered manually. ODEQ continues to update RBDMS.
	Continue implementation of SWIFT and Surfer software for plume movement and contouring; software training for staff.	ODEQ staff will make use of this software, as needed. ODEQ has not used the software during the past fiscal year.
	Use and maintain technical references for thorough reviews of UIC well construction and operation.	ODEQ staff has made use of the State's technical references as needed over the last fiscal year.
	Continue efforts to obtain GIS coordinates for newly identified and existing wells.	ODEQ UIC staff continue to obtain GIS coordinates for new and newly identified existing wells.

ODEQ UIC Program Deliverables per Land Protection FOCUS FY 2019 Document		
Goal and Objective	**Task**	**Comments**
Goal 2, Objective A, Permit Tracking	Maintain UIC permits webpage to ensure public access to new permits and permit modifications.	UIC maintains and updates the ODEQ UIC permit webpage. The webpage is current and up to date.
Goal 2, Objective B, UIC	Review Class I permit applications, provide customer assistance, handle public participation, review annual fall-off pressure tests.	One permit renewal application, for American Zinc Recycling, was received on December 13, 2018. Four fall-off pressure tests were conducted and reviewed during FY 2019. Further details of these activities can be found in Table 4, below.
	Continue identifying Class V UIC wells through facility inspections by ECLS. Issue permits where needed and add to existing well inventory.	ODEQ UIC staff continues to work with ODEQ Environmental Complaints and Local Services (ECLS) and Water Quality Division (WQD) staff to identify new and newly found Class V wells in the State.
Goal 5, Objective A, UIC	Conduct compliance inspections at permitted UIC facilities.	ODEQ UIC staff carried out 12 semi-annual inspections of Class I wells during FY 2019. See Table 4, below, for details.
	Fair and timely compliance and enforcement efforts, consistent with ODEQ goals and Federal obligations.	ODEQ reported they had achieved their goal of carrying out UIC enforcement and compliance efforts in a fair and timely manner during FY 2019.
Goal 5, Objective B, UIC	Ensure enforcement actions are completed in accordance with ODEQ timelines and procedures.	ODEQ has taken enforcement actions when needed during FY 2019, including issuing one notice of non-compliance. These actions were completed in a timely manner. See Table 4, below, for details.
Goal 5, Objective B, Supplemental Environmental Projects	Promote supplemental environmental projects (SEPs) per ODEQ policy.	The State includes SEPs as part of every consent order and enforcement action they issue as part of their agency policy.
Goal 5, Objective B, Criminal Enforcement	Work with Federal and State criminal law enforcement as needed.	ODEQ UIC did not identify violations determined to warrant criminal enforcement during FY 2019.
Goal 5, Objective C, Quality Assurance/ Quality Control (QA/QC)	Participate in EPA's QA/QC Program; submit QA/QC plans on schedule.	ODEQ participates in EPA's QA/QC Program. The QAPP and QMP are updated annually, and in FY 2019, both plans were up to date.

Table 4. ODEQ FY 2019 Class I UIC Activity Summary

ODEQ UIC Program Activity Summary July 1, 2018 to September 30, 2019	
Class I Nonhazardous Internal Mechanical Integrity Tests (MITs)/Semi-Annual Inspections: American Zinc Recycling (two wells) – 4; Mid-Way – 2; OG&E – 2; PCC – 2; Real Alloy – 2	12
NOVs Issued: OG&E – 1 issued on 3/22/2019 (notice of non-compliance)	1
Two-Part External (5-year) MITs: American Zinc Recycling – 10/26/2018	1
Fall off Pressure Tests: American Zinc (2 wells) – N/A*; Mid-Way – 12/19-24/2018; OG&E – 5/1-3/2019; PCC – 3/18-22/2019; Real Alloy – 10/16-22/2018	4
New Operational Permits Issued: none	0
Permit Renewals Issued: none	0
Permit Modifications Issued: 1 (OG&E)	1
Permit Extensions Issued: none	0
Permit Applications canceled or withdrawn: none	0
Performance Activity Measures (PAMs): SDW-07a: 0 (0%); SDW-07c: 0 (0%), SDW-08: 0 (0%)	0

* Per American Zinc Recycling Corp.'s UIC permit modification, fall-off pressure and 5-year external MIT testing are not required while the wells are not injecting.

Table 5. Class I Nonhazardous Mechanical Integrity Tests, Fall-Off Pressure Tests, and Inspections

ODEQ Class I Nonhazardous Well Fall-Off Pressure Tests, Internal and External Mechanical Integrity Tests (MITs), and Semi-Annual Inspection Dates October 1, 2018 to September 30, 2019				
Operator	**Injection Well**	**Fall-Off Pressure Test**	**Semi-Annual Inspection Dates with Internal MITs**	**Most Recent 5-Year External MIT**
American Zinc Recycling Corporation (formerly, Horsehead Corporation)	WDW-1	N/A*	October 12, 2018, April 23, 2019†	October 26, 2018*
	WDW-2			
Mid-Way Environmental Services, Inc.	WDW-1	December 19-24, 2018	October 10, 2018, April 17, 2019	November 7, 2017
OG&E McClain Generating Station	WDW-1	May 1-3, 2019	October 9, 2018, April 23, 2019	May 10, 2016
Pryor Chemical Co.	WDW-1	March 18-22, 2019	October 8, 2018, April 26, 2019	March 30-31, 2015
Real Alloy Recycling, Inc. (formerly, Aleris Recycling, Inc.)	WDW-1	October 16-22, 2018	October 11, 2018, April 16, 2019	April 24, 2015

* An Oxygen Activation Log was conducted on October 26, 2018, as part of the external MIT. Per American Zinc Recycling Corporation's 2014 UIC permit modification, fall-off pressure and 5-year external MIT testing are not required while the wells are not injecting. However, as part of the facility's permit renewal process, a 5-year MIT and fall-off testing are required; the fall-off test is scheduled to take place January 23-28, 2020. Currently these wells are not injecting.

† American Zinc Recycling Corporation – both wells were inspected on each date.

HIGHLIGHTS FROM CLASS I NONHAZARDOUS INJECTION SITES FOR FY 2019

American Zinc Recycling Corporation (formerly, Horsehead Corporation):

American Zinc Recycling Corporation is located adjacent to the City of Bartlesville in Washington County, and is no longer in operation. At one time, the facility produced various metals from the smelting and refining of zinc concentrates, secondary materials, and other zinc-rich materials. Beginning in 1980, the facility maintained a waste management system, including two lined impoundments, a process water treatment facility, and two deep injection wells for storm water and process water control. Part of the facility has undergone closure and corrective action and is now in post-closure under RCRA Permit #OKD000829440. The active portion of the facility was a recycling operation that received metallic-rich by-products from the Horsehead facility in Palmerton, Pennsylvania. Lead-rich feedstocks were recovered for sale to

the lead processing industry, and zinc feedstocks were sent to other Horsehead facilities for further refinement into commercial grade zinc products. Process wastewater was injected into the injection wells following treatment in the facility's wastewater treatment plant. This process was discontinued in 2012, and the facility is currently not injecting into the injection wells.

An operations permit for the two injection wells was issued by ODEQ in September 2008 and expired in September 2018. On February 5, 2014, Horsehead Corporation filed an application for a permit modification for a temporary reduction in annual fall-off testing and 5-year external mechanical integrity testing requirements, due to the cessation of injection activities. On April 14, 2014, ODEQ issued a draft permit modification, allowing the temporary reductions in specific testing requirements. A final permit modification was issued on June 9, 2014. The permit modification was in effect while there was no injection into the injection wells. The permit modification required that prior to resumption of injection activities, Horsehead (now, American Zinc Recycling) conduct fall-off and five-year external MIT testing on both wells as required by the original permit. When injection commences, the permit modification will expire, and Horsehead will be required to comply with all the original permit requirements. The permit modification expired with the permit on September 22, 2018. Fall-off testing and a five-year external MIT test are required for each well as part of a permit renewal. As part of a five-year MIT, an Oxygen Activation Log was conducted on October 26, 2018; fall-off testing is scheduled to take place January 23-28, 2020.

On December 13, 2018, ODEQ received a permit renewal application from the facility. ODEQ issued an administrative NOD on February 22, 2019; response to administrative NOD was received on March 11, 2019; the permit application was determined to be administratively complete on March 25, 2019. ODEQ issued a technical NOD on June 18, 2019; responses to the technical NOD were received on August 23 and October 9, 2019. ODEQ responded to the facility by letter, dated December 16, 2019. The permit renewal application is currently under review by ODEQ, and the State is awaiting the fall-off test results. Fall -off testing is scheduled to take place January 23-28, 2020.

On May 1, 2017, American Zinc Recycling, LLC announced a name change for this facility, from Horsehead Corporation to American Zinc Recycling Corporation. ODEQ received a notice of the name change, dated May 11, 2017, and sent acknowledgment and acceptance of name change to the facility on May 12, 2017.

The required semi-annual internal MITs and inspections were conducted for both wells on October 11, 2018 and April 16, 2019. As part of the permit renewal process, fall-off testing is required, and is scheduled to take place January 23-28, 2020. The most recent 5-year MIT was conducted on October 26, 2018 as a requirement for the permit renewal process. The 5-yr MIT test report was submitted to ODEQ on November 21, 2018; ODEQ approved the report and sent an approval letter to the facility, dated December 17, 2018.

Mid-Way Environmental Services, Inc.:

On August 11, 2014, ODEQ issued an operations permit for a commercial Class I nonhazardous waste injection well for Mid-Way Environmental Services, Inc., located in Lincoln County, near Chandler, OK. Mid-Way is also a permitted commercial solid waste processing facility, and accepts shipments of nonhazardous industrial wastewater from various off-site sources. Those wastewaters are processed through the facility and disposed of in the Class I injection well. The Class I UIC permit is for 10 years, to expire on August 11, 2024.

Because the well is in an area with large regional faults, upon consultation with EPA Region 6, ODEQ required Mid-Way to submit a seismicity contingency plan as part of their operations permit. The seismicity contingency plan was to include the following: identification of earthquakes with epicenters within three (3) miles of the injection well; additional seismic monitoring depending on levels of observed seismicity as determined by ODEQ; a reduction in injected volumes and additional modifications to the operating parameters, dependent on levels of observed seismicity; additional geotechnical information depending on the levels of observed seismicity as determined by ODEQ; and more frequent than annual well testing, including pressure buildup, pressure fall-off, static pressures, reservoir parameters, and transmissibility.

Mid-Way submitted a seismicity contingency plan, which was received by ODEQ on September 8, 2014, and was reviewed by ODEQ and EPA. After several rounds of reviews and revisions, Mid-Way submitted a revised seismicity contingency plan, received by ODEQ on May 4, 2015, and approved by ODEQ on June 26, 2015. Required revisions to the seismicity contingency plan included lowering the threshold for action of a defined strong earthquake from magnitude 6.0 to 4.0; adding a proposed methodology for defining the frequency and magnitude of earthquakes within a 10-mile radius of the injection well; and conducting ongoing comparisons of fall-off test data for the injection well.

ODEQ sent a letter to Mid-Way, dated April 22, 2016, asking Mid-Way to plug back its injection well for consistency with OCC requirements for injection wells in seismically active areas not to be in communication with the crystalline basement rock. During February 21 to 24, 2017, Mid-Way plugged back its well.

During EPA's October 30, 2018 office visit, ODEQ reported that Mid-Way's reported quarterly seismicity values are all under threshold values, however, Mid-Way has not been submitting Hall Plots, per their approved seismic contingency plan; ODEQ was to follow up with Mid-Way about this. As of this EOY report date, this is still an outstanding issue, and ODEQ is to follow up with Mid-Way during FY 2020.

In response to an increase in total dissolved solids (TSDs) in Mid-Way's deep monitoring well (DMW)-1, in September 2015, ODEQ required Mid-Way to determine the cause of the increase. As part of the investigation, ODEQ requested a new monitoring well (DMW-2), drilled to the same depth as DMW-1, to differentiate whether a plug-back of DMW-1 was leaking, or whether the high TSDs were naturally occurring. Mid-Way submitted a well report to ODEQ, dated

March 29, 2016, which showed that ground water collected from DMW-2 also had high TDS; and stating this was the natural aquifer condition. On August 9, 2016, ODEQ sent a letter to Mid-Way, requesting that Mid-Way monitor DMW-1 and DMW-2 water levels with a pressure transducer for a minimum of six weeks, to include both injection and shut-in periods, to obtain sufficient data for comparison to the pressure readings and injection rates recorded at the injection well. ODEQ also requested a graph showing the water level elevations and water quality concentrations over time for DMW-1. In January 2017, ODEQ requested EPA Region 6 assistance in reviewing Mid-Way's August 31-September 2, 2016 fall-off test. EPA reviewed the fall-off test, and compared it with prior tests to advise ODEQ whether it appears the injection well integrity is being maintained. EPA sent an email response to ODEQ on June 21, 2017.

On February 28, 2017, Mid-Way submitted a report to ODEQ, with the results of monitoring of DMW 1 and 2 with a pressure transducer for 10 weeks. Mid-Way's report showed no ground water fluctuations associated with days injection occurred, and concluded no direct hydraulic connection between the injection well, injection zone, and deep monitoring wells. The report concluded that the ground water observed from DMW 1 and 2 is representative of the natural ground water formation the monitoring wells are completed in, which is below the base of treatable water, and are not affected by injection activities. ODEQ accepted the results of Mid-Way's investigation, and in a July 21, 2017 letter to the facility, requested a plan for monitoring the lowermost USDW. Mid-Way submitted the monitoring plan to ODEQ on September 20, 2019; ODEQ approved the plan by letter dated October 17, 2019 (FY 2020).

A 5-year external MIT test was conducted on November 7, 2017. ODEQ received a test report, dated December 4, 2017, which ODEQ approved by letter, dated January 2, 2018.

Internal MITs and semiannual inspections were conducted on October 10, 2018, and April 17, 2019.

Pressure fall-off testing was conducted from December 19-24, 2018. Mid-Way submitted a test report, on May 21, 2019, which ODEQ approved on June 7, 2019.

Oklahoma Gas and Electric Company (OG&E) McClain Generating Station:

The Class I nonhazardous injection well for OG&E is in McClain County, approximately 2.5 miles southwest of the energy plant. The injection well operates as needed to dispose of nonhazardous cooling tower reject water. The reject water is water in the cooling tower system that has exceeded the maximum level of total dissolved solids, and can no longer be recirculated through the cooling tower without impacting the cooling tower efficiency and air emissions. The injection well receives the wastewater by pipeline. The wastewater is filtered and stored at the energy plant prior to pumping to the injection facility.

The required semi-annual internal MITs and inspections were conducted on October 9, 2018 and April 23, 2019. OG&E self-reported a loss of continuous monitoring by letter to ODEQ, dated January 25, 2019. The continuous monitoring loss was due to a lockout/tagout procedure to de-

energize the programmable logic controls for the injection well pumps, in order to upgrade the pump hardware. No injection occurred during this time. ODEQ sent OG&E a notice of non-compliance, dated March 22, 2019, for loss of continuous monitoring with failure to notify ODEQ of anticipated non-compliance due to well maintenance. OG&E implemented new procedures to notify ODEQ of any anticipated non-compliance due to well maintenance.

OG&E performed its fall-off pressure test from May 1 to 3, 2019. ODEQ received a fall-off test pressure report on June 5, 2019, and approved it on June 14, 2019. A 5-year MIT was conducted on May 10, 2016. A report, dated June 10, 2016, was accepted by ODEQ on July 22, 2016.

During FY 2019, ODEQ issued a minor permit modification for one-time injection of a 25% glycol/water mixture. This mixture is used in OG&E's cooling lines for the power plant, and was being replaced as part of maintenance activities. The mixture went to the 500,000-gallon surface impoundment, where it mixed with the wastewater and was injected. ODEQ approved the permit modification in a letter to OG&E, dated April 22, 2019.

Pryor Chemical Company (PCC) (formerly, Wil-Gro Fertilizer, Inc.):

Pryor Chemical Company (PCC) is a nitrogen fertilizer production facility located in Mayes County, approximately 35 miles east of Tulsa, OK. PCC operates a Class I nonhazardous injection well and injects ammonia and urea-contaminated storm water and process wastewater. The well began operating in 1968 by Oklahoma Ordnance Works Authority (OOWA), and was later acquired by Wil-Gro Fertilizer, Inc. In 2001, LSB Industries, Inc. acquired the facility from Wil-Gro Fertilizer, and renamed the plant Pryor Chemical Company. ODEQ modified the UIC permit on June 11, 2009, to allow the injection of process wastewater with the condition that the annulus pressure be greater than the injection pressure at all times, including when the facility is not injecting. PCC's current 10-year UIC permit with ODEQ expired on January 23, 2018. ODEQ allows PCC to continue operating the well on the expired permit, as the facility has submitted a permit renewal application.

Semi-annual internal MITs and inspections were conducted on October 8, 2018 and April 26, 2019. Annual fall-off testing was conducted from March 18-22, 2019. ODEQ received the fall-off test report on April 19, 2019, and responded by letter to PCC, dated June 6, 2019, stating that the results were similar to those of previous fall-off tests, and that the results would be further evaluated in conjunction with PCC's permit renewal application. The most recent 5-year external MIT was conducted on March 30-31, 2015.

In FY 2016, EPA and ODEQ continued their discussions regarding technical concerns surrounding the continued operation of the PCC Class I nonhazardous injection well. Technical concerns include a thin and possibly inadequate confining zone; the injection zone's proximity to a USDW; a shallow, artesian, and naturally fractured injection zone; domestic water wells within one mile of the injection well; an inadequate monitoring well program; and numerous and repeated permit violations for exceeding maximum permitted injection pressure and loss of continuous monitoring. Exceeding maximum injection pressure is a violation of 40 CFR Section

146.13, which requires that injection pressure shall not exceed a maximum, to assure that the injection pressure does not initiate new fractures or propagate existing fractures in the injection zone, and does not initiate fractures in the confining zone or cause the movement of injection or formation fluids into a USDW.

EPA remains concerned about the potential movement of contaminants into USDWs by the historic and continued underground injection in this well. EPA sent a letter to ODEQ, dated January 27, 2016, stating that EPA is firmly of the opinion that these are major technical issues that cannot be overcome. EPA strongly recommended that ODEQ not renew PCC's Class I nonhazardous injection well permit, which expired in January 2018.

ODEQ shared with EPA two letters received from PCC, dated November 13, 2015 and December 8, 2015. The November 13, 2015 letter compares the PCC injection well with other artesian disposal wells. The December 8, 2015 letter compares the PCC injection well with the Mid-Way Environmental Services injection well. EPA addressed these letters in its January 27, 2016 letter to ODEQ. The artesian disposal wells cited are not comparable with the PCC well, in that they are much deeper; have disposal formations with higher salinity native formation fluids, requiring more differential pressure to move fluids into a USDW; have significantly more vertical confinement distance between the injection zone and the base of the lowermost USDW; and have multiple layers of confining formations, offering notably more geological isolation in comparison to the Pryor site. The Mid-Way Environmental Services injection well is not comparable with the PCC well, in that the top of its injection zone is much deeper (4,200 feet below ground surface verses a depth of 304 feet for the PCC well), offering a significantly greater degree of confinement and protection of the USDW; and the PCC site historical injectivity and falloff tests display anomalous cross flow behavior over two decades of use, suggesting pressure communication between formation vertical layers, compare to no cross flow behavior observed for the Mid-Way well.

On January 29, 2016, ODEQ sent a letter to PCC, attaching EPA's January 27, 2016 letter to ODEQ, and stating that it was unlikely that ODEQ would renew PCC's injection well permit when it expired in 2018, and that PCC should continue seeking an alternate solution for management of its wastewater.

ODEQ sent PCC a May 12, 2016 letter, providing PCC 45 days to respond with its intentions concerning management of its wastewater after its injection well permit has expired. In that letter, ODEQ noted that they had met with PCC multiple times to discuss the technical issues. PCC responded to ODEQ by letter, dated June 21, 2016, stating that it was actively exploring options for alternate management of its wastewater, including possible indirect and direct Oklahoma Pollution Discharge Elimination System (OPDES) discharge, as well as "other potential solutions," and look to continuing to work with ODEQ on issues including options implementation.

On October 17, 2016 (FY 2017), PCC informed ODEQ, by email, that it was examining options, including OPDES direct discharge to Pryor Creek/Neosho River, or OPDES indirect discharge to

OOWA. PCC stated its plans include engineering studies to determine potential treatment options, and had scheduled a pilot test in November 2016; and source reduction projects to impact the volume of wastewater for disposal/discharge and chemical makeup of the water. PCC discussed its infrastructure requirements with OOWA, and informed ODEQ that it contracted with OOWA to build a lift station to service the additional water load from the plant. On August 30, 2017, ODEQ informed EPA that PCC intends to submit a permit renewal application for its Class I injection well, despite ODEQ's May 12, 2016 letter to PCC, notifying of ODEQ's intention not to renew PCC's Class I nonhazardous injection well permit.

During EPA's October 30, 2018, office visit to ODEQ, ODEQ discussed that the Neosho River segment under consideration for direct discharge is impaired for Nitrogen, which would require Pryor's waste stream to undergo extensive treatment if discharge to this segment were selected as a disposal option. ODEQ also reported that PCC is doing some source reduction prior to injection.

On October 5, 2017, PCC submitted to ODEQ, a renewal application for its Class I nonhazardous injection well. ODEQ found the renewal application to be administratively complete on January 25, 2018. On August 8, 2018, ODEQ received Revision No. 1 to the permit renewal application. On September 25, 2018, ODEQ issued a technical NOD of the permit renewal application to PCC. PCC submitted to ODEQ responses to the technical NOD, dated November 9, 2018, and February 21, 2019. EPA remains concerned about the operation of the Pryor injection well due to the reasons above.

Real Alloy Recycling, Inc. (formerly Aleris Recycling, Inc.):

Real Alloy Recycling, located in Creek County near the city of Sapulpa, produces secondary aluminum and, to a lesser extent, secondary magnesium metal and magnesium anodes for cathodic protection. Aluminum beverage cans and aluminum and magnesium scrap and dross are imported into the plant and recycled into aluminum remelt scrap ingots, secondary magnesium ingots, and magnesium cathodic protection anodes. One Class I, nonhazardous injection well is operated for the disposal of ammonia- and chloride-contaminated storm water runoff, leachate and seepage from its on-site closed industrial waste landfill, and nonhazardous process wastewater which is stored in a retention lagoon on site.

Real Alloy performed its FY 2019 fall-off pressure test from October 16-22, 2018. Real Alloy submitted a report dated December 5, 2018, which was accepted by ODEQ in a letter dated December 17, 2018. For the FY 2020 fall-off pressure test, Real Alloy submitted a test plan on August 19, 2019, which ODEQ approve by letter dated August 23, 2019; this testing was conducted Oct. 15-23, 2019.

The most recent 5-year external MIT was conducted on April 24, 2015.

CLASS IV INJECTION WELLS

Two facilities, Phillips 66 and Holly West, have a total of 20 inactive Class IV injection wells (10 dormant remediation wells at each site), associated with RCRA remediation projects. These wells have been inactive for several years.

CLASS V INJECTION WELLS

ODEQ cites an inventory of 2,813 Class V injection wells for FY 2019, which consists of large capacity septic systems, industrial septic systems and remediation wells. Presently, there are no dual permitted Class II/Class V wells.

The City of Clinton submitted a Tier III permit application for a Class V Drinking Water Treatment Residual (DWTR) injection well to ODEQ on June 26, 2015. On November 19, 2015, the City submitted a new application because they decided to move the location of the DWTR injection well. The proposed permit would allow the City to operate a facility to inject DWTR from its water treatment plant. The well is proposed to have a depth of 9,600 feet and a disposal zone between 8,120- and 9,480-feet depth. The waste is brine with an estimate TDS content of 8,000 to 12,000 mg/L, and is generated from treatment of drinking water.

An ODEQ process meeting (public meeting) was held on February 16, 2016, to explain the ODEQ permitting process and comment period to the public.

Throughout the application process, ODEQ issued several NODs, requiring changes or additional information and data; the City has submitted responses to the NODs. As of FY 2019, the City is also exploring a surface water discharge option, and the DWTR injection well project is on hold.

FISCAL YEAR 2019 SUMMARY AND CONCLUSIONS

EPA Region 6 concurs with ODEQ regarding their technical concerns with the continued operation of the Pryor Chemical Company's Class I nonhazardous injection well, including the potential movement of contaminants into USDWs. EPA continues to be of the opinion that these are major technical issues that cannot be overcome, and continues to strongly recommend that ODEQ not renew PCC's Class I nonhazardous injection well permit, which expired in January 2018.

EPA commends ODEQ in their willingness and diligence to seek support from EPA in handling the issues related to the Pryor Chemical Company injection well continued operation, as well as seismicity and TDS issues related to the Mid-Way Environmental Services injection well.

ODEQ has been successful in directing injection well facilities to comply with pressure fall-off testing requirements. ODEQ continues its ongoing efforts to require all Class I facilities to perform formation pressure fall-off testing on an annual basis, except for American Zinc

Recycling Corporation, which has a permit modification for reduced testing while the well is not injecting. During FY 2019, ODEQ received and reviewed fall-off pressure tests for all four of the operating UIC Class I wells subject to this requirement.

Mid-Way Environmental Services has not been submitting Hall Plots to ODEQ, per their approved seismic contingency plan. ODEQ is to follow up with Mid-Way during FY 2020 regarding this issue.

ODEQ conducts semi-annual inspections on schedule, and is proactive in issuing violations and reporting deficiencies where warranted. ODEQ conducts follow up inspections to ensure the violations and deficiencies are corrected. ODEQ is also proactive in issuing NODs for permit applications and written reports they receive, requiring changes and/or additional information before approval.

ODEQ UIC maintains an ongoing training program for staff, participating in training sessions and seminars that are relevant to their work. Their required UIC Federal reporting (7520 forms), annual narrative, well inventory, and FY 2020 PPG application to EPA, were received on time. ODEQ's FY 2019 PPG application was received six days late; at the time, ODEQ reported that due to a retirement, new employees had taken over and were learning the program.

ODEQ's UIC staff continues to work with ECLS and WQD staff to identify new and newly found Class V UIC wells in the state. The State continues to populate the RBDMS with data from Class I UIC well activities. EPA HQ changed how electronic data reporting is accomplished. Data which were previously pulled directly from RBDMS are now entered manually. ODEQ continues to update RBDMS.

During FY 2019, on September 15, 2019, amendments to OAC Chapter 653, ASR, became effective, namely, updating definitions for consistency with the Oklahoma Water Resources Board; providing permit application fees and annual operating fees for ASR; providing notification requirements for ASR facilities; and including specific language requiring bench-scale and field-scale pilot testing for evaluating the compatibility of delivered water with the receiving aquifer for the purpose of ASR. These amendments were initially proposed during FY 2018.

In conclusion, the ODEQ UIC program is adequately staffed. The Class I, III, IV and Class V program, administered by ODEQ, continues to be well managed and includes a strong field operations component, including semi-annual inspections, enforcement, and follow-up. ODEQ is commended for its demonstrated diligence on handling difficult permitting issues, and willingness to consult with EPA on these situations when warranted, and for its initiative and continued focus in development of an ASR program.